```
LLL              IIIIIIIIII   BBBBBBBBBBBB   RRRRRRRRRRR    TTTTTTTTTTTTTTT   LLL
LLL              IIIIIIIIII   BBBBBBBBBBBB   RRRRRRRRRRR    TTTTTTTTTTTTTTT   LLL
LLL              IIIIIIIII    BBBBBBBBBBBB   RRRRRRRRRRR    TTTTTTTTTTTTTTT   LLL
LLL                 III       BBB      BBB   RRR      RRR        TTT          LLL
LLL                 III       BBB      BBB   RRR      RRR        TTT          LLL
LLL                 III       BBB      BBB   RRR      RRR        TTT          LLL
LLL                 III       BBB      BBB   RRR      RRR        TTT          LLL
LLL                 III       BBB      BBB   RRR      RRR        TTT          LLL
LLL                 III       BBBBBBBBBBBB   RRRRRRRRRRR        TTT          LLL
LLL                 III       BBBBBBBBBBBB   RRRRRRRRRRR        TTT          LLL
LLL                 III       BBBBBBBBBBBB   RRRRRRRRRRR        TTT          LLL
LLL                 III       BBB      BBB   RRR   RRR          TTT          LLL
LLL                 III       BBB      BBB   RRR   RRR          TTT          LLL
LLL                 III       BBB      BBB   RRR    RRR         TTT          LLL
LLL                 III       BBB      BBB   RRR      RRR       TTT          LLL
LLL                 III       BBB      BBB   RRR      RRR       TTT          LLL
LLLLLLLLLLLLLLL     III       BBBBBBBBBBBB   RRR      RRR       TTT          LLLLLLLLLLLLLL
LLLLLLLLLLLLLLL     IIIIIIIII  BBBBBBBBBBBB  RRR      RRR       TTT          LLLLLLLLLLLLLL
LLLLLLLLLLLLLLL     IIIIIIIII  BBBBBBBBBBBB  RRR      RRR       TTT          LLLLLLLLLLLLLL
```

```
0000    1              .TITLE  LIB$MATCHC - Match Character
0000    2              .IDENT  /1-007/           ; File: LIBMATCHC.MAR Edit: RKR1007
0000    3      ;
0000    4      ;
0000    5      ;**********************************************************************
0000    6      ;*                                                                    *
0000    7      ;*   COPYRIGHT (c) 1978, 1980, 1982, 1984 BY                          *
0000    8      ;*   DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS.           *
0000    9      ;*   ALL RIGHTS RESERVED.                                             *
0000   10      ;*                                                                    *
0000   11      ;*   THIS SOFTWARE IS FURNISHED UNDER A LICENSE AND MAY BE USED AND COPIED *
0000   12      ;*   ONLY IN  ACCORDANCE WITH  THE  TERMS  OF  SUCH  LICENSE  AND WITH THE *
0000   13      ;*   INCLUSION OF THE ABOVE COPYRIGHT NOTICE. THIS SOFTWARE OR  ANY  OTHER *
0000   14      ;*   COPIES THEREOF MAY NOT BE PROVIDED OR OTHERWISE MADE AVAILABLE TO ANY *
0000   15      ;*   OTHER PERSON.  NO TITLE TO AND OWNERSHIP OF  THE  SOFTWARE IS  HEREBY *
0000   16      ;*   TRANSFERRED.                                                     *
0000   17      ;*                                                                    *
0000   18      ;*   THE INFORMATION IN THIS SOFTWARE IS  SUBJECT TO CHANGE WITHOUT NOTICE *
0000   19      ;*   AND  SHOULD  NOT  BE  CONSTRUED AS  A COMMITMENT BY DIGITAL EQUIPMENT *
0000   20      ;*   CORPORATION.                                                     *
0000   21      ;*                                                                    *
0000   22      ;*   DIGITAL ASSUMES NO RESPONSIBILITY FOR THE USE  OR  RELIABILITY OF ITS *
0000   23      ;*   SOFTWARE ON EQUIPMENT WHICH IS NOT SUPPLIED BY DIGITAL.          *
0000   24      ;*                                                                    *
0000   25      ;*                                                                    *
0000   26      ;**********************************************************************
0000   27      ;
0000   28      ;
0000   29      ;++
0000   30      ; FACILITY: General Utility Library
0000   31      ;
0000   32      ; ABSTRACT:
0000   33      ;
0000   34      ;       search a string for the first occurrence of a substring
0000   35      ;
0000   36      ; ENVIRONMENT: User Mode, AST Reentrant
0000   37      ;
0000   38      ;--
0000   39      ; AUTHOR: Donald G. Petersen, CREATION DATE: 03-Jan-78
0000   40      ;
0000   41      ; MODIFIED BY:
0000   42      ;
0000   43      ;       DGP, 03-Jan-78 : VERSION 00
0000   44      ; 01    - Original
0000   45      ; 00-02 - DGP 06-Jan-78 - Change MATCHC operands
0000   46      ; 1-001 - Update version number and copyright notice.  JBS 16-NOV-78
0000   47      ; 1-002 - Add " " to PSECT directive. JBS 21-DEC-78
0000   48      ; 1-003 - Fix so it doesnt wipe out argument descriptors!.
0000   49      ;         Also clean up code.  SBL 02-Feb-79
0000   50      ; 1-004 - Enhance to recognize additional classes of string descriptors
0000   51      ;         by invoking LIB$ANALYZE_SDESC_R3 to extract length and
0000   52      ;         address of 1st byte of data.   RKR 22-MAY-1981
0000   53      ; 1-005 - Add special-case code to process string descriptors that
0000   54      ;         "read" like fixed strign descriptors.  RKR 7-OCT-1981.
0000   55      ; 1-006 - Redirect jsb's from LIB$ANALYZE_SDESC_R3 to
0000   56      ;         LIB$ANALYZE_SDESC_R2.
0000   57      ;         RKR 18-NOV-T981.
```

```
0000    58 ; 1-007 - Correct computation of matched position -- corrupted in edits
0000    59 ;         4 through 6.  RKR 18-DEC-1981
```

```
                    0000      61              .SBTTL  DECLARATIONS
                    0000      62 ;
                    0000      63 ; INCLUDE FILES: NONE
                    0000      64 ;
                    0000      65
                    0000      66 ; EXTERNAL SYMBOLS:
                    0000      67         .DSABL  GBL                 ; Explicit externals only
                    0000      68         .EXTRN  LIB$ANALYZE_SDESC_R2   ; Extract length and address of
                    0000      69                                     ; 1st data byte
                    0000      70 ;
                    0000      71 ; MACROS:
                    0000      72 ;
                    0000      73         $DSCDEF                     ; fields in a descriptor
                    0000      74
                    0000      75 ;
                    0000      76 ; EQUATED SYMBOLS: NONE
                    0000      77 ;
                    0000      78
                    0000      79 ;
                    0000      80 ; OWN STORAGE: NONE
                    0000      81 ;
                    0000      82
                    0000      83 ;
                    0000      84 ; PSECT DECLARATIONS:
                    0000      85 ;
                00000000      86         .PSECT _LIB$CODE PIC, SHR, LONG, EXE, NOWRT
                    0000      87
```

LIB$MATCHC
1-007

N 9

- Match Character   16-SEP-1984 00:13:42 VAX/VMS Macro V04-00   Page 4
LIB$MATCHC - match characters   6-SEP-1984 11:09:07 [LIBRTL.SRC]LIBMATCHC.MAR;1   (3)

```
                          0000    89              .SBTTL LIB$MATCHC  - match characters
                          0000    90     ;++
                          0000    91     ; FUNCTIONAL DESCRIPTION:
                          0000    92     ;
                          0000    93     ;       The character string supplied is searched for the first
                          0000    94     ;       incidence of the substring specified.  An index is returned
                          0000    95     ;       which is the relative position of the first character of the
                          0000    96     ;       substring within the string or zero if no occurrence of the
                          0000    97     ;       substring was encountered.  If both strings have
                          0000    98     ;       zero length or if the substring has a zero length, then the
                          0000    99     ;       routine returns as if the substring has been found at the
                          0000   100     ;       first character position.  If the source string has a zero
                          0000   101     ;       length and the substring a non-zero length, then a zero is
                          0000   102     ;       returned.
                          0000   103     ;
                          0000   104     ; CALLING SEQUENCE:
                          0000   105     ;
                          0000   106     ;       index.wlu.v = LIB$MATCHC(sub_str.rt.dx,string.rt.dx)
                          0000   107     ;
                          0000   108     ;
                          0000   109     ; INPUT PARAMETERS:
                          0000   110     ;
         00000004         0000   111     ;       sub_string = 4                          ; Adr of substring desc
         00000008         0000   112     ;       src_string = 8                          ; Adr of src string desc
                          0000   113     ;
                          0000   114     ; IMPLICIT INPUTS:
                          0000   115     ;
                          0000   116     ;       NONE
                          0000   117     ;
                          0000   118     ; OUTPUT PARAMETERS:
                          0000   119     ;
                          0000   120     ;       NONE
                          0000   121     ;
                          0000   122     ; IMPLICIT OUTPUTS:
                          0000   123     ;
                          0000   124     ;       NONE
                          0000   125     ;
                          0000   126     ; FUNCTION VALUE:
                          0000   127     ;
                          0000   128     ;       index.wlu.v - Position of substring in source, or zero
                          0000   129     ;                     if no match.
                          0000   130     ;
                          0000   131     ; SIDE EFFECTS:
                          0000   132     ;
                          0000   133     ;       NONE
                          0000   134     ;
                          0000   135     ;--
                          0000   136
              007C        0000   137              .ENTRY LIB$MATCHC , ^M<R2, R3, R4, R5, R6> ; Entry point
                          0002   138
  50   04 AC  D0          0002   139              MOVL    SUB_STRING(AP), R0      ; Address of sub_string descr.
  02   03 A0  91          0006   140              CMPB    DSC$B_CLASS(R0), #DSC$K_CLASS_D ; read like fixed ?
       06     1A          000A   141              BGTRU   1$                      ; no
  54   04 BC  7D          000C   142              MOVQ    @SUB_STRING(AP), R4     ; lenght->R4, address->R5
       0C     11          0010   143              BRB     2$                      ; join common flow
                          0012   144
  00000000'GF  16         0012   145  1$:         JSB     G^LIB$ANALYZE_SDESC_R2  ; Extract: length->R1, addr->R2
```

LIBSMATCHC
1-007

- Match Character
LIBSMATCHC - match characters

B 10

16-SEP-1984 00:13:42 VAX/VMS Macro V04-00 Page 5
6-SEP-1984 11:09:07 [LIBRTL.SRC]LIBMATCHC.MAR;1   (3)

```
        54  51  3C  0018  146        MOVZWL  R1, R4                  ; save sub_string length
        55  52  D0  001B  147        MOVL    R2, R5                  ; save sub_string address
                    001E  148
    50  08 AC  D0  001E  149 2$:     MOVL    SRC_STRING(AP), R0      ; Address of src_string descr.
    02  03 A0  91  0022  150         CMPB    DSC$B_CLASS(R0), #DSC$K_CLASS_D ; read like fixed ?
            06  1A  0026  151         BGTRU   3$                      ; no
    51  08 BC  7D  0028  152         MOVQ    @SRC_STRING(AP), R1     ; length->R1, address->R2
            06  11  002C  153         BRB     4$                      ; join commmon flow
                    002E  154
 00000000'GF  16  002E  155 3$:      JSB     G^LIB$ANALYZE_SDESC_R2  ; Extract: length->R1, addr->R2
        56  51  3C  0034  156 4$:     MOVZWL  R1, R6                  ; save src_string length
                    0037  157
 62  51  65  54  39  0037  158        MATCHC  R4, (R5), R1, (R2)      ; find sub_string in src_string
                    003C  159                                        ; State of regs after a MATCHC instr.
                    003C  160                                        ; R0 = If match occurred, 0,
                    003C  161                                        ;      else number of bytes in object
                    003C  162                                        ;      string.
                    003C  163                                        ; R1 = If match occurred, the address of
                    003C  164                                        ;      one byte beyond the object
                    003C  165                                        ;      string,
                    003C  166                                        ;      else address of the object string
                    003C  167                                        ; R2 = If match occurred, the number of
                    003C  168                                        ;      bytes remaining at the source
                    003C  169                                        ;      string after the match,
                    003C  170                                        ;      else 0
                    003C  171                                        ; R3 = If match occurred, the address of
                    003C  172                                        ;      one byte beyond the last byte
                    003C  173                                        ;      matched,
                    003C  174                                        ;      else address of one byte beyond
                    003C  175                                        ;      the source string.
                    003C  176                                        ;
                    003C  177
            0D  12  003C  178        BNEQ    NOMATCH                 ; No match?
    50  56  54  A3  003E  179        SUBW3   R4, R6, R0              ; R0 = diff. in string lengths.
                    0042  180                                        ; Has to be non-neg else no match.
        50  50  3C  0042  181        MOVZWL  R0, R0
        50  52  C2  0045  182        SUBL    R2, R0                  ; Subtract bytes left in source string
                    0048  183                                        ; giving offset into source.
            50  D6  0048  184        INCL    R0                      ; one origin
            04  004A  185        RET
                    004B  186
                    004B  187 NOMATCH:
            50  D4  004B  188        CLRL    R0                      ; Indicate no match
            04  004D  189        RET
                    004E  190        .END
```

```
DSC$B_CLASS                 = 00000003
DSC$K_CLASS_D               = 00000002
LIB$ANALYZE_SDESC_R2          *******  X   00
LIB$MATCHC                    00000000 RG   02
NOMATCH                       0000004B R    02
SRC_STRING                  = 00000008
SUB_STRING                  = 00000004
```

```
                          +------------------+
                          ! Psect synopsis !
                          +------------------+
```

PSECT name	Allocation		PSECT No.	Attributes											
. ABS .	00000000 (	0.)	00 (0.)	NOPIC	USR	CON	ABS	LCL	NOSHR	NOEXE	NORD	NOWRT	NOVEC	BYTE
ABS	00000000 (	0.)	01 (1.)	NOPIC	USR	CON	ABS	LCL	NOSHR	EXE	RD	WRT	NOVEC	BYTE
_LIB$CODE	0000004E (	78.)	02 (2.)	PIC	USR	CON	REL	LCL	SHR	EXE	RD	NOWRT	NOVEC	LONG

```
                          +------------------------+
                          ! Performance indicators !
                          +------------------------+
```

Phase	Page faults	CPU Time	Elapsed Time
Initialization	31	00:00:00.01	00:00:02.73
Command processing	109	00:00:00.30	00:00:02.62
Pass 1	131	00:00:01.09	00:00:07.00
Symbol table sort	0	00:00:00.10	00:00:00.35
Pass 2	48	00:00:00.35	00:00:01.89
Symbol table output	3	00:00:00.01	00:00:00.01
Psect synopsis output	2	00:00:00.02	00:00:00.02
Cross-reference output	0	00:00:00.00	00:00:00.00
Assembler run totals	326	00:00:01.89	00:00:14.63

The working set limit was 1050 pages.
8372 bytes (17 pages) of virtual memory were used to buffer the intermediate code.
There were 10 pages of symbol table space allocated to hold 136 non-local and 4 local symbols.
190 source lines were read in Pass 1, producing 13 object records in Pass 2.
8 pages of virtual memory were used to define 7 macros.

```
                          +-------------------------+
                          ! Macro library statistics !
                          +-------------------------+
```

Macro library name	Macros defined
_255DUA28:[SYSLIB]STARLET.MLB;2	4

190 GETS were required to define 4 macros.

There were no errors, warnings or information messages.

MACRO/ENABLE=SUPPRESSION/DISABLE=(GLOBAL,TRACEBACK)/LIS=LIS$:LIBMATCHC/OBJ=OBJ$:LIBMATCHC MSRC$:LIBMATCHC/UPDATE=(ENH$:LIBMATCHC)

LIBLOCC
LIS

LIBLUN
LIS

LIBMOVC3
LIS

LIBMOVTC
LIS

LIBPOLYF
LIS

LIBINSQTI
LIS

LIBINTOVE
LIS

LIBLEXICA
LIS

LIBPKARIT
LIS

LIBMATCHC
LIS

LIBPOLYD
LIS

LIBLOOKUP
LIS

LIBLPLINE
LIS

LIBMOVC5
LIS

LIBLEN
LIS

LIBMSG
LIS

LIBINSV
LIS

LIBMATCH
LIS

LIBMOVTUC
LIS